

FIG. 1



002220\* 55022950

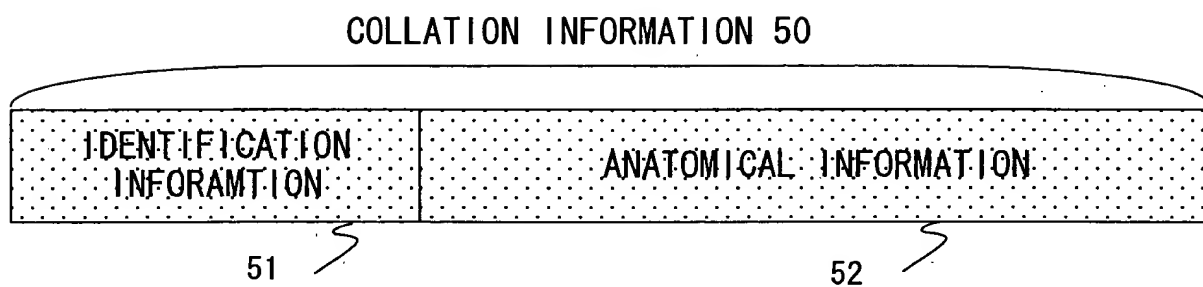


FIG. 3

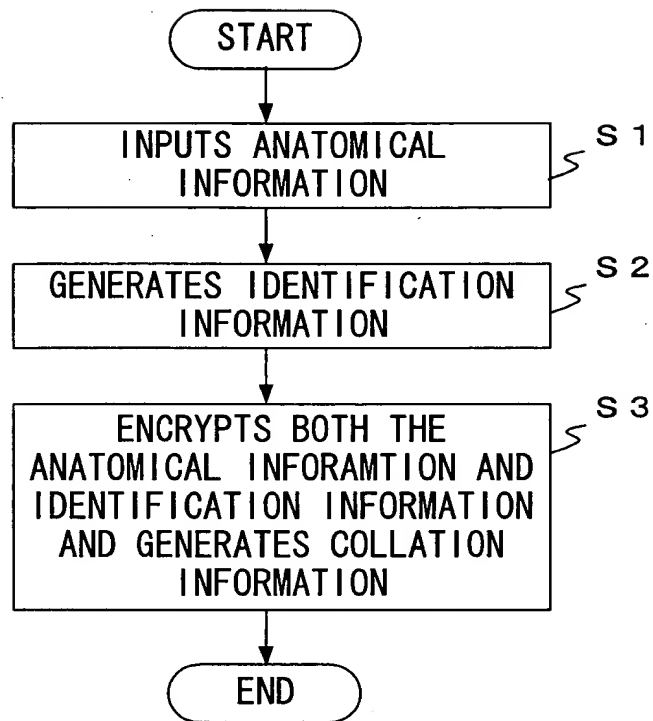


FIG. 4

```

graph LR
    101[ANATOMICAL  
INFORMATION INPUT  
UNIT  
101] --> 111[ENCRYPTION  
INFORMATION  
GENERATING UNIT  
111]
    102[IDENTIFICATION  
INFORMATION  
GENERATING UNIT  
102] --> 111
    111 --> 200[COLLATION  
INFORMATION  
GENERATING UNIT  
200]

```

FIG. 5

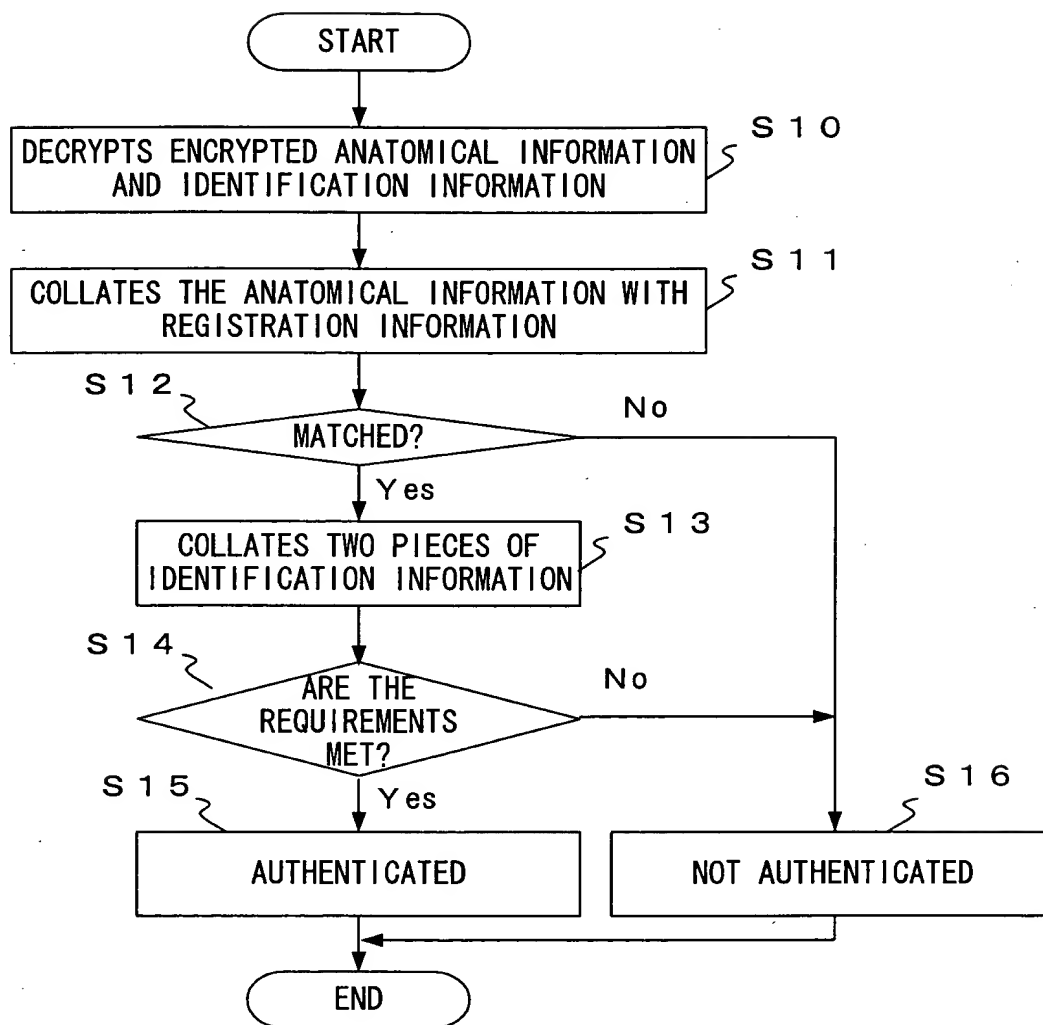


FIG. 6

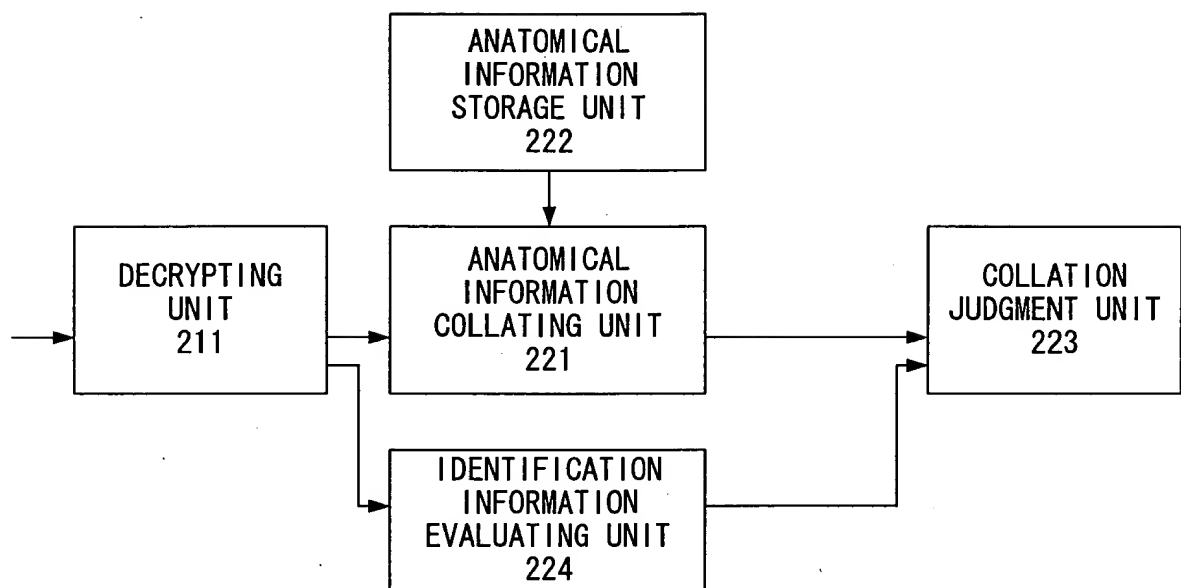


FIG. 7

002220 850/2250

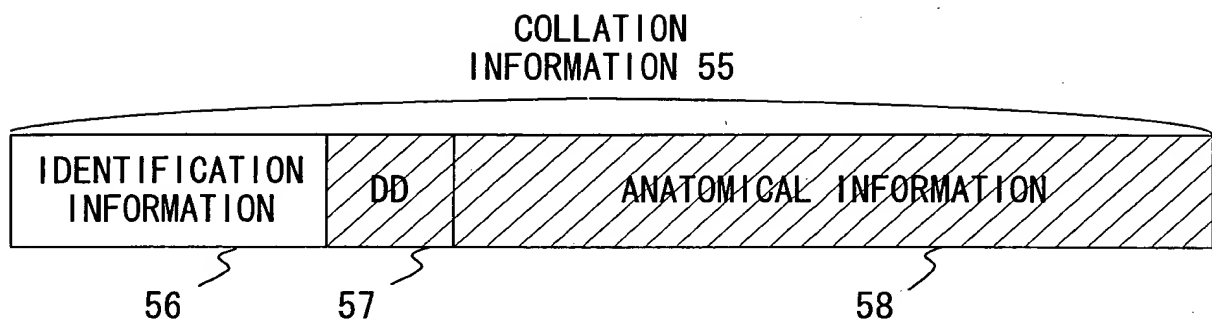


FIG. 8



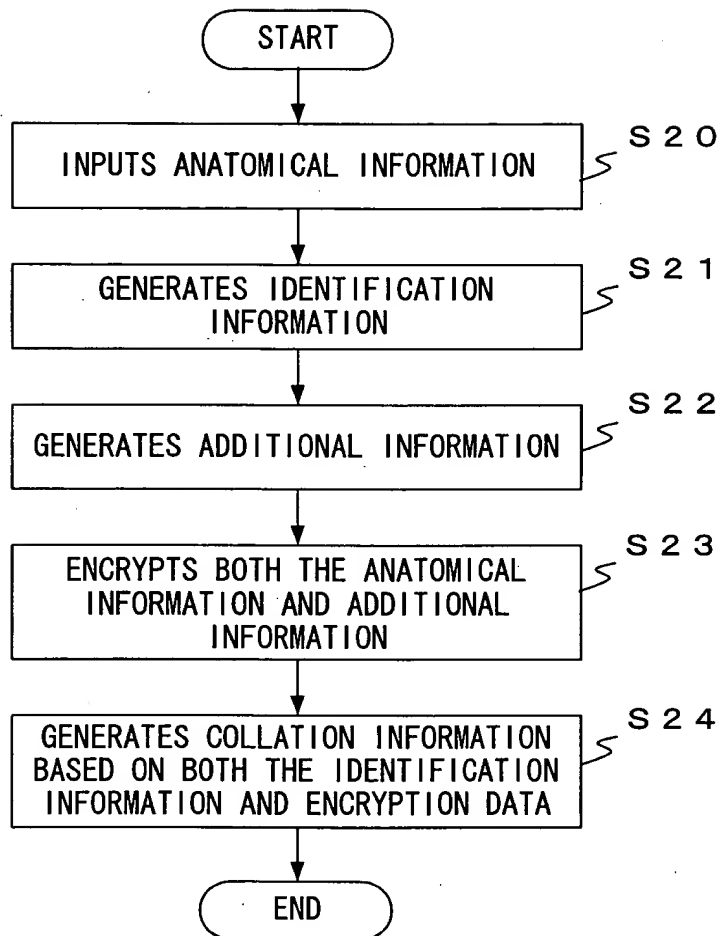


FIG. 9

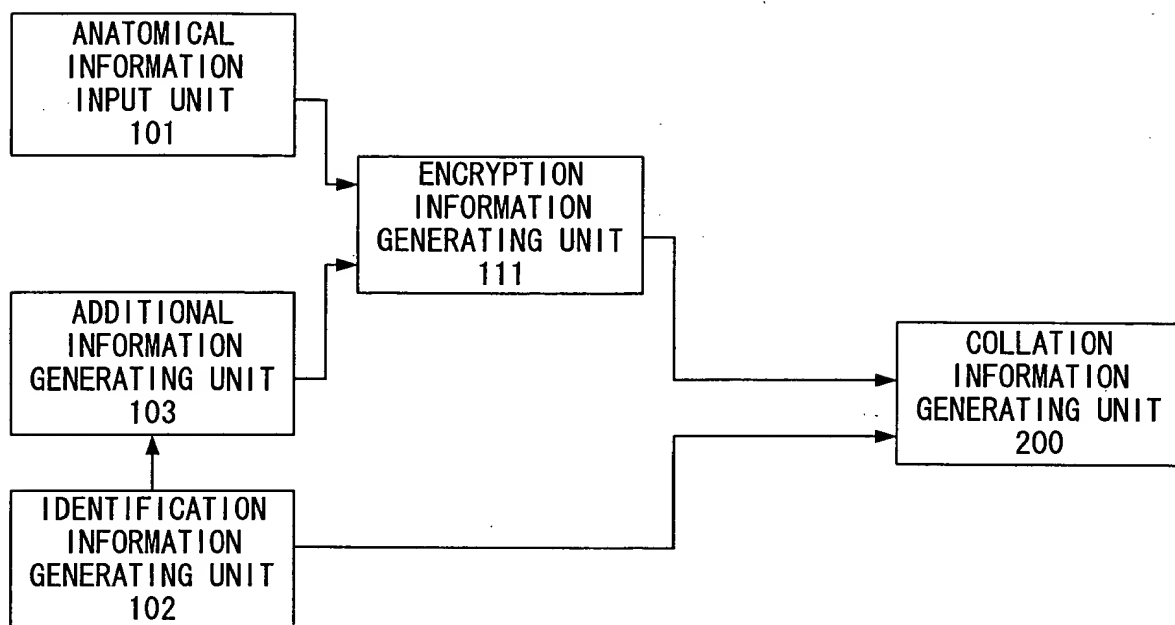


FIG. 10

```

graph TD
    START([START]) --> S30[INITIALIZE A HASH VALUE (H) TO 0]
    S30 --> S31[DESIGNATES LEADING DATA AS A PROCESS TARGET]
    S31 --> S32{IS THE PROCESS OF COMPLETE DATA COMPLETED?}
    S32 -- Yes --> S37[COMPLETES THE GENERATION OF A HASH VALUE]
    S32 -- No --> S33[SHIFTS THE HASH VALUE (H) BEING CALCULATED LEFTWARD BY 8-BITS]
    S33 --> S34[ADDS DATA TO BE PROCESSED TO THE HASH VALUE (H)]
    S34 --> S35[DIVIDES THE HASH VALUE (H) BY THE FULL SIZE OF DATA TO BE PROCESSED]
    S35 --> S36[DESIGNATES SUBSEQUENT DATA AS A PROCESS TARGET]
    S36 --> S32
    S37 --> END([END])
  
```

FIG. 11

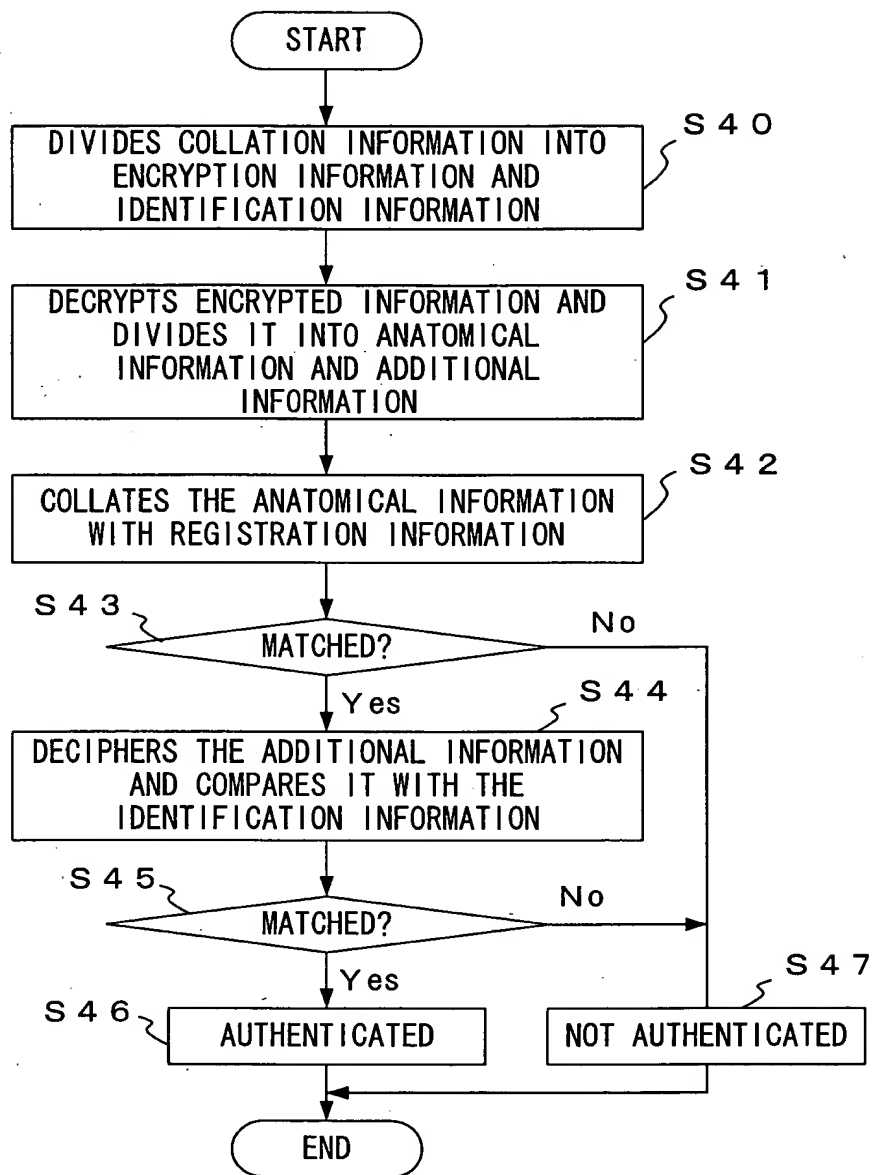


FIG. 12

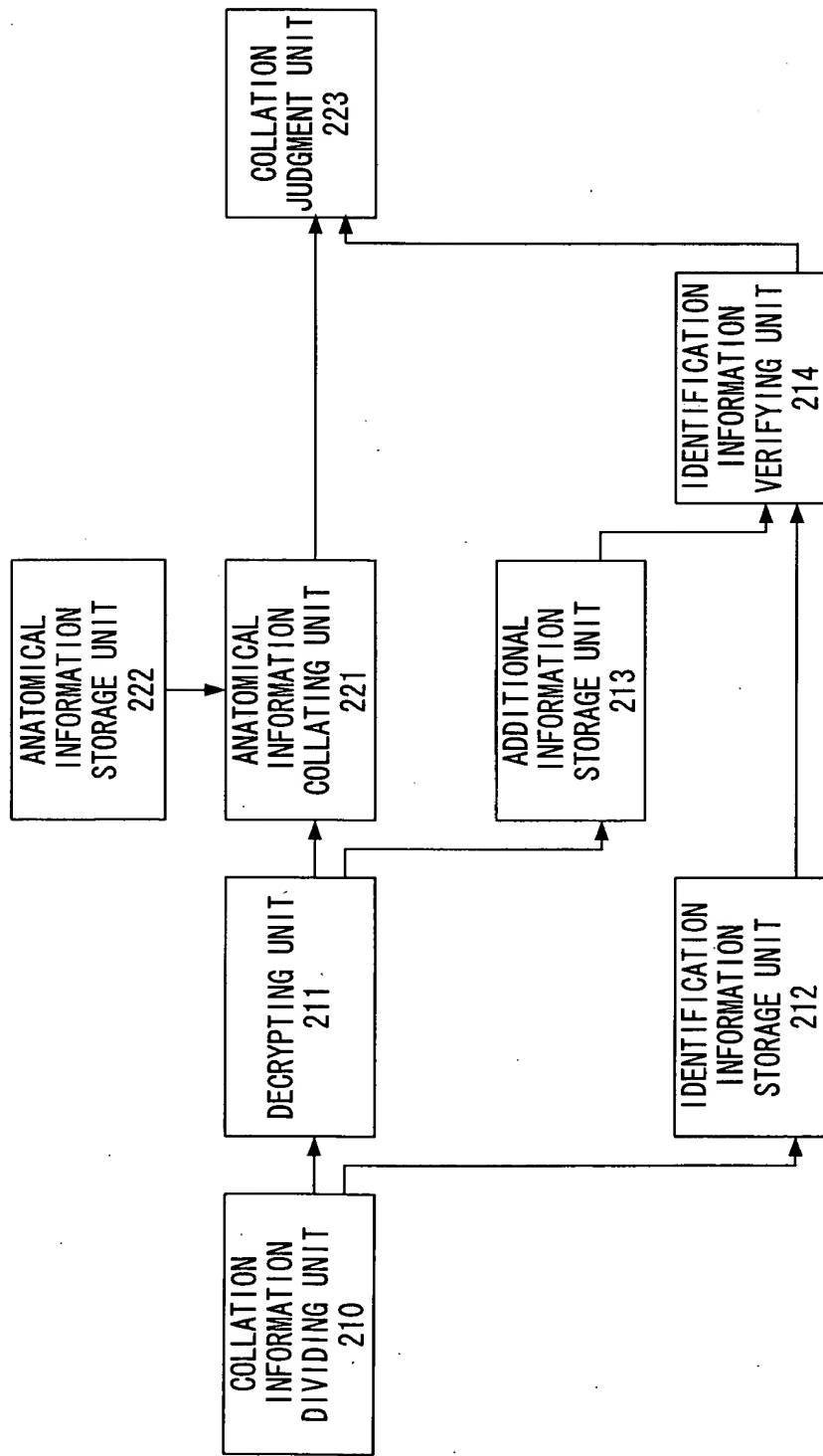


FIG. 13

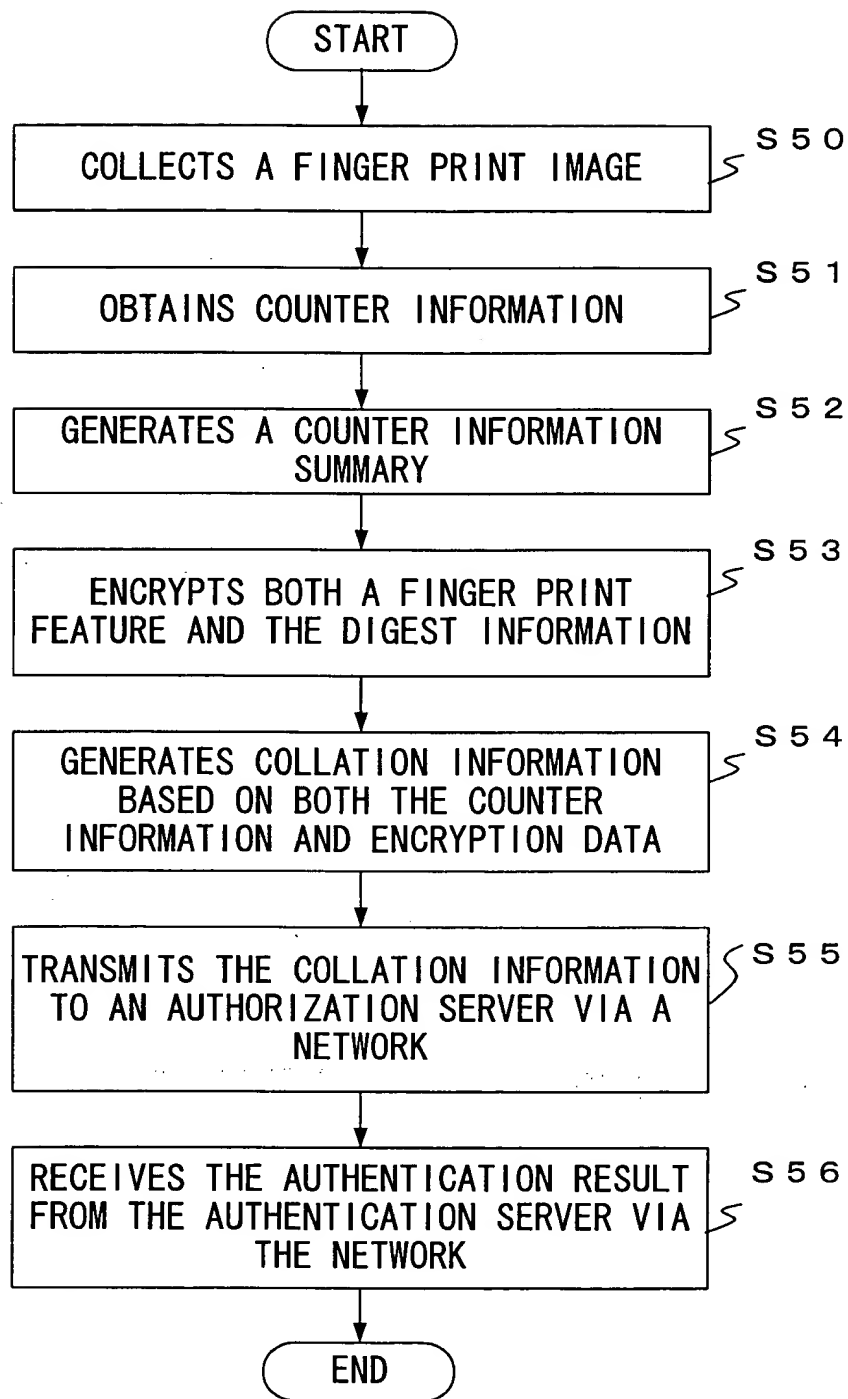


FIG. 14

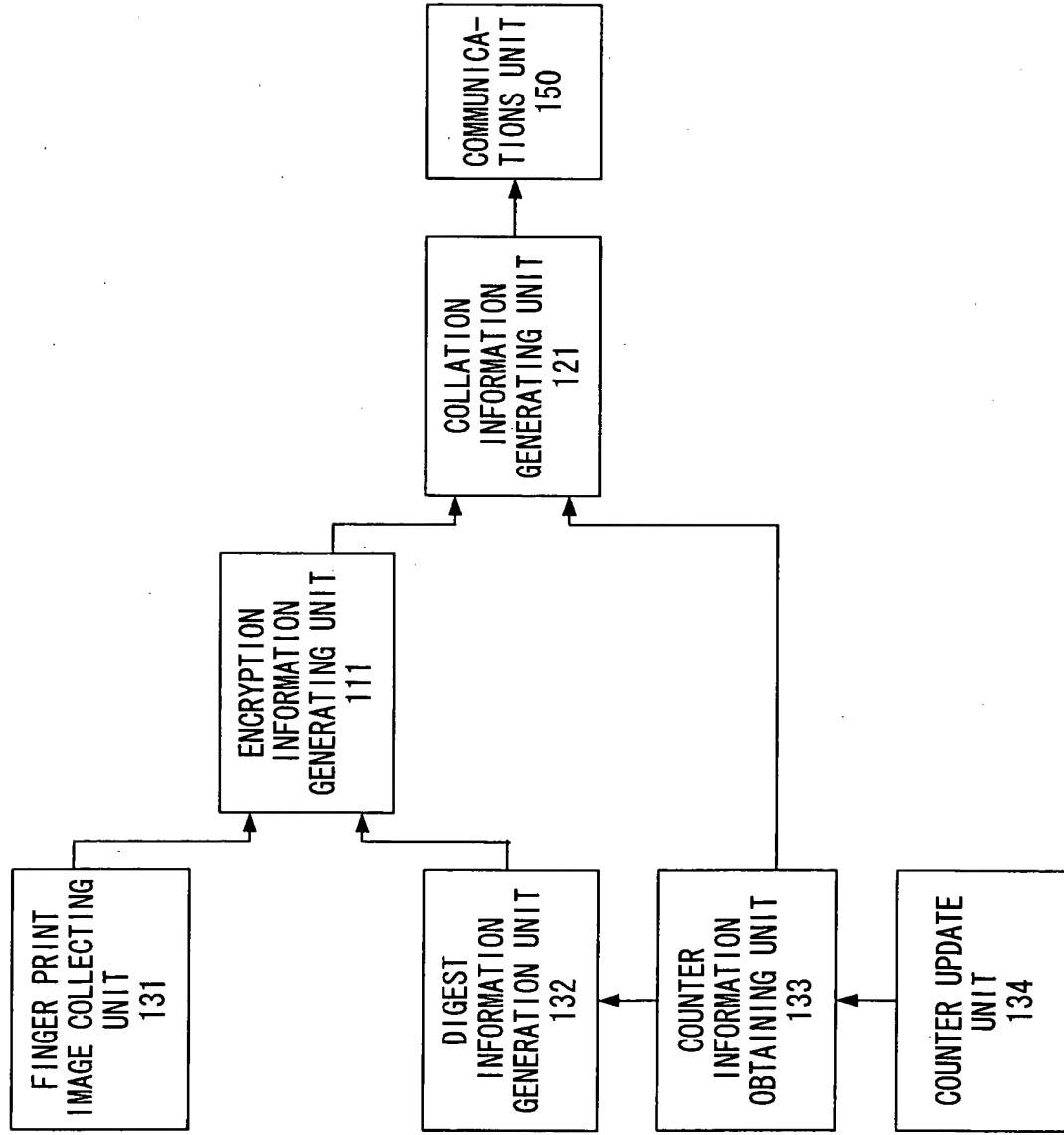


FIG. 15

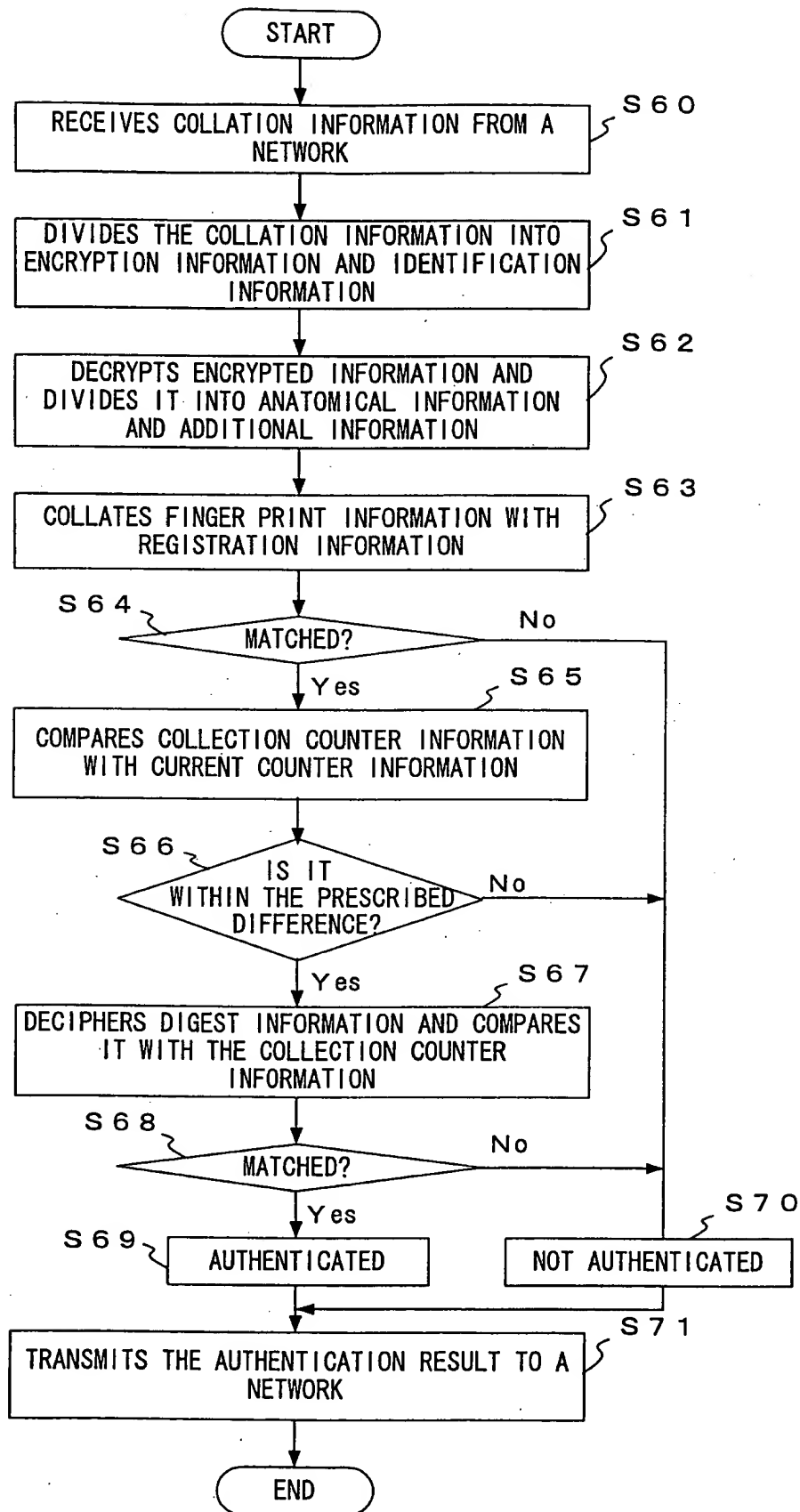


FIG. 16



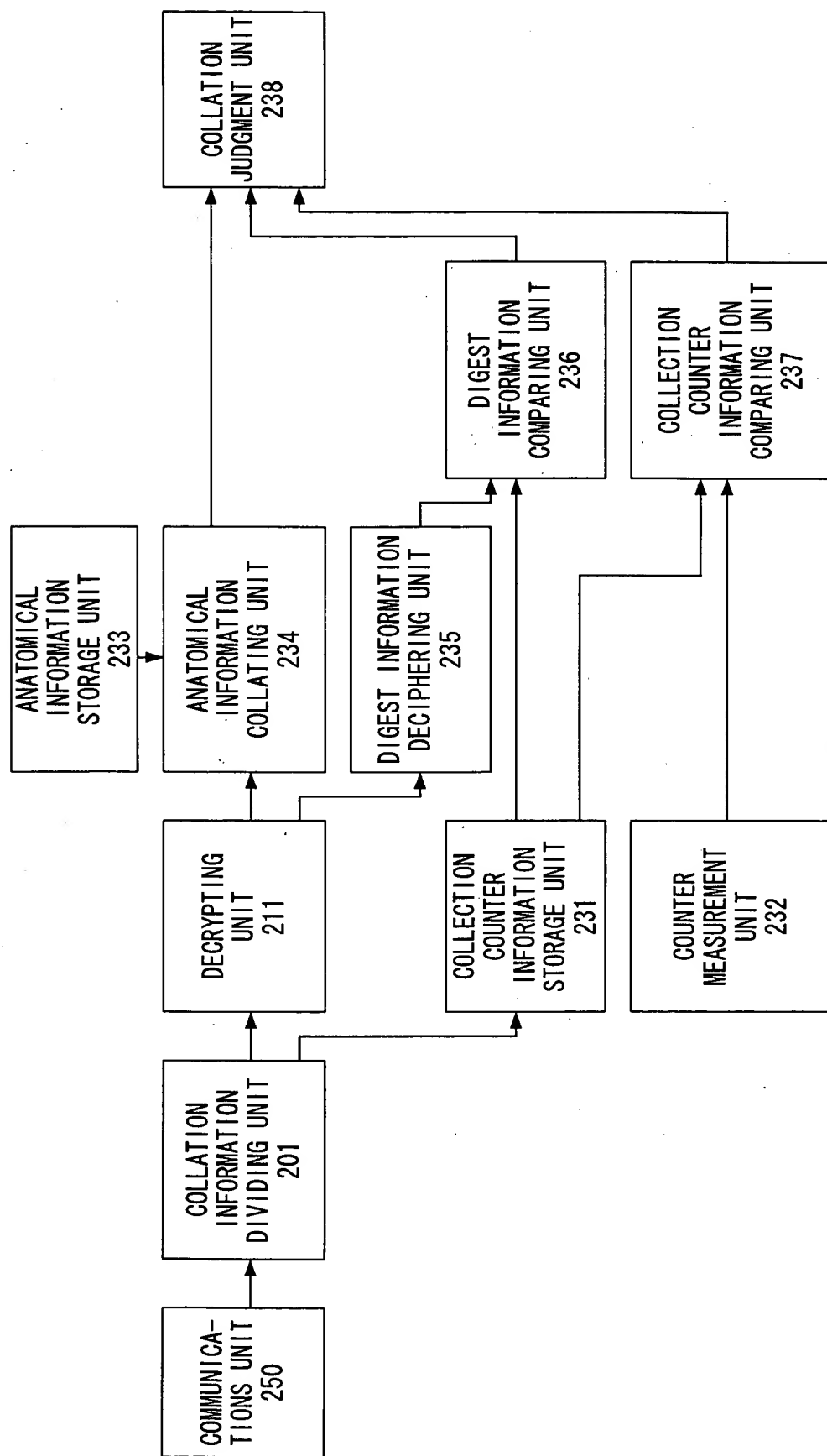


FIG. 17

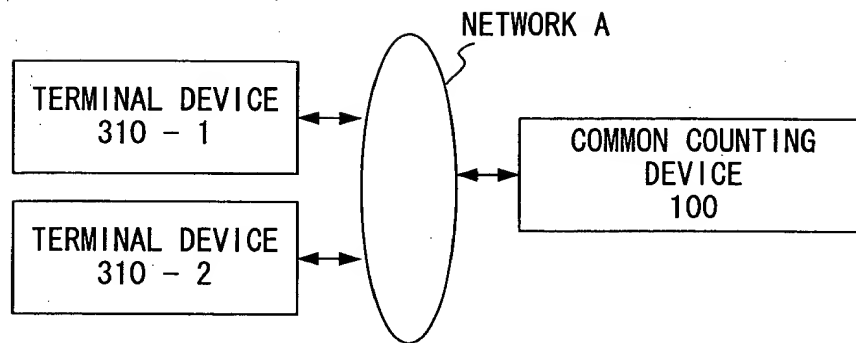


FIG. 18

a0	FINGER PRINT DATA	(1)
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route1	a 1	a 0	FINGER PRINT DATA	(2)
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route2	route1	a 2	a 0	FINGER PRINT DATA	(3)
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D(x) : DIGEST INFORMATION (HASH VALUE) OF x

FIG. 19

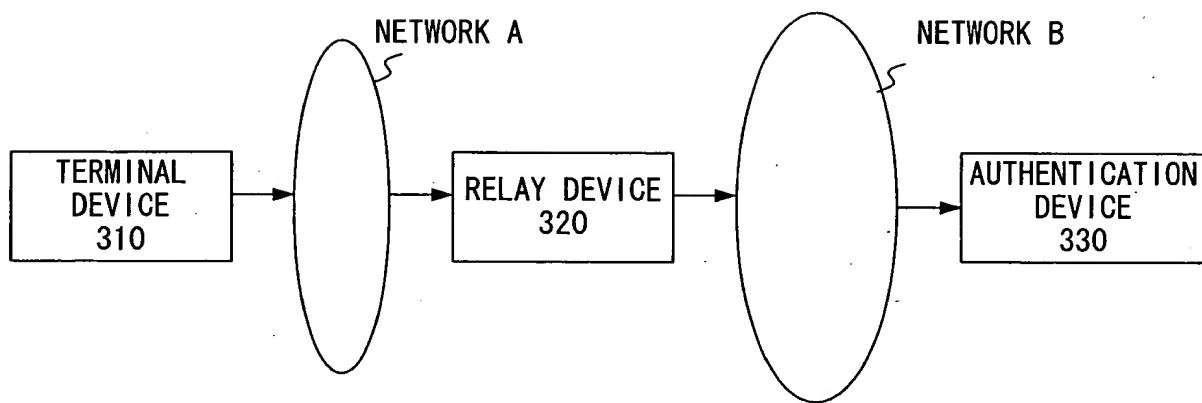


FIG. 20

```
graph TD; START([START]) --> S75[COLLECTS A FINGER PRINT IMAGE]; S75 --> S76[CALCULATES THE CRITERION VALUE OF FINGER PRINT DATA]; S76 --> S77[GENERATES COLLATION INFORMATION BY ENCRYPTING BOTH THE FINGER PRINT AND THE CRITERION VALUE OF THE FINGER PRINT DATA]; S77 --> S78[TRANSMITS THE COLLATION INFORMATION TO A RELAY DEVICE VIA A NETWORK]; S78 --> END([END]);
```

The flowchart illustrates the first embodiment of the fingerprint authentication system. It begins with a START terminal, followed by a process box labeled S75: "COLLECTS A FINGER PRINT IMAGE". This is followed by a process box labeled S76: "CALCULATES THE CRITERION VALUE OF FINGER PRINT DATA". Next is a process box labeled S77: "GENERATES COLLATION INFORMATION BY ENCRYPTING BOTH THE FINGER PRINT AND THE CRITERION VALUE OF THE FINGER PRINT DATA". This is followed by a process box labeled S78: "TRANSMITS THE COLLATION INFORMATION TO A RELAY DEVICE VIA A NETWORK". The flowchart ends with an END terminal.

FIG. 21



```
graph TD; START([START]) --> S80[RECEIVES COLLATION INFORMATION FROM A NETWORK]; S80 --> S81[RECOGNIZE THE MAPPING VALUE OF AN IMMEDIATELY PRECEDING RELAY DEVICE IN THE COLLATION INFORMATION]; S81 --> S82[CALCULATES THE DIGEST INFORMATION OF THE RELEVANT RELAY DEVICE]; S82 --> S83[CALCULATES A MAPPING VALUE INDICATING THE RELEVANT RELAY DEVICE BASED ON BOTH THE MAPPING VALUE OF THE IMMEDIATELY PRECEDING RELAY DEVICE AND THE DIGEST INFORMATION OF THE RELEVANT RELAY DEVICE]; S83 --> S84[REPLACES THE MAPPING VALUE INDICATING THE IMMEDIATELY PRECEDING RELAY DEVICE WITH MAPPING VALUE INDICATING THE RELEVANT RELAY DEVICE]; S84 --> S85[ADDS THE RELEVANT RELAY DEVICE INFORMATION TO THE TOP OF COMMUNICATIONS DATA]; S85 --> S86[TRANSMITS COLLATION INFORMATION TO THE NETWORK]; S86 --> END([END]);
```

START

S 8 0 RECEIVES COLLATION INFORMATION FROM A NETWORK

S 8 1 RECOGNIZE THE MAPPING VALUE OF AN IMMEDIATELY PRECEDING RELAY DEVICE IN THE COLLATION INFORMATION

S 8 2 CALCULATES THE DIGEST INFORMATION OF THE RELEVANT RELAY DEVICE

S 8 3 CALCULATES A MAPPING VALUE INDICATING THE RELEVANT RELAY DEVICE BASED ON BOTH THE MAPPING VALUE OF THE IMMEDIATELY PRECEDING RELAY DEVICE AND THE DIGEST INFORMATION OF THE RELEVANT RELAY DEVICE

S 8 4 REPLACES THE MAPPING VALUE INDICATING THE IMMEDIATELY PRECEDING RELAY DEVICE WITH MAPPING VALUE INDICATING THE RELEVANT RELAY DEVICE

S 8 5 ADDS THE RELEVANT RELAY DEVICE INFORMATION TO THE TOP OF COMMUNICATIONS DATA

S 8 6 TRANSMITS COLLATION INFORMATION TO THE NETWORK

END

FIG. 23

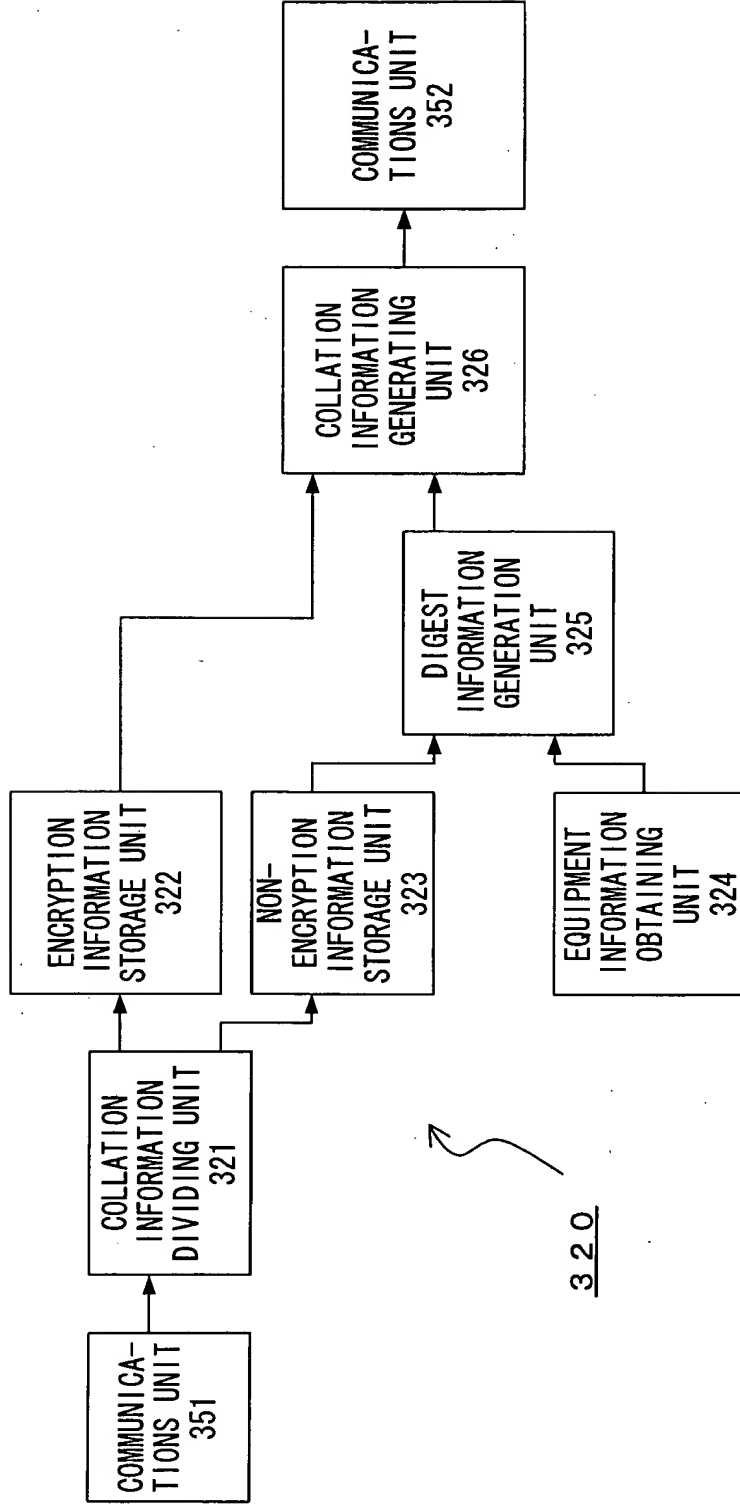


FIG. 24



```

graph TD
    START([START]) --> S90[RECEIVES COLLATION INFORMATION FROM A NETWORK]
    S90 --> S91[DIVIDES THE COLLATION INFORMATION INTO ENCRYPTION INFORMATION AND ADDITIONAL REPEATER INFORMATION]
    S91 --> S92[DECRYPTS ENCRYPTED INFORMATION AND DIVIDES IT INTO ANATOMICAL INFORMATION AND A CRITERION VALUE]
    S92 --> S93[COLLATES FINGER PRINT INFORMATION WITH REGISTRATION INFORMATION]
    S93 --> S94{MATCHED?}
    S94 -- Yes --> S95[CALCULATES A CRITERION VALUE BASED ON THE ADDITIONAL REPEATER INFORMATION]
    S94 -- No --> S99[NOT AUTHENTICATED]
    S95 --> S96[COMPARES THE CALCULATED CRITERION VALUE WITH DECRYPTED CRITERION VALUE]
    S96 --> S97{MATCHED?}
    S97 -- Yes --> S98[AUTHENTICATED]
    S97 -- No --> S99
    S98 --> S100[TRANSMITS THE AUTHENTICATION RESULT TO THE NETWORK]
    S99 --> S100
    S100 --> END([END])

```

FIG. 25

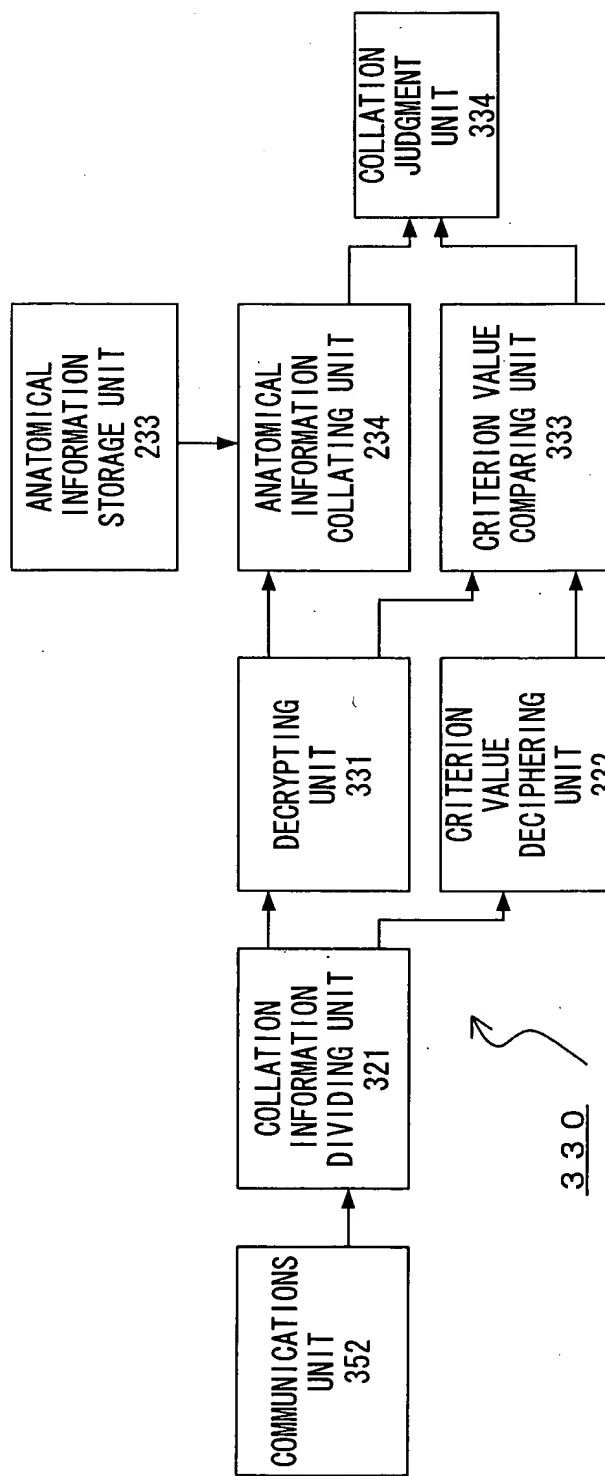


FIG. 26

